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AUG 20 2001

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REMARKS

1 **AUG 11 DATE CHANGELED**  
2 In response to the April 10, 2001, Office Action in the

3 above-identified case, applicants respectfully request

4 reconsideration in view of the following amendments and remarks.

5 The Examiner rejected the pending claims under 35 U.S.C. §§ 103  
6 and 112. In the ensuing sections of this response, applicants  
7 will respond to those rejections and attempt to highlight the  
8 differences between the claims and the cited references such that  
9 it becomes apparent to the Examiner that these rejections should  
10 be reconsidered.

11 Applicants wish to thank the Examiner for identifying the  
12 missing reference from the Information Disclosure Statement. The  
13 reference, Research Disclosure 35143, "Stable Emulsion Polymers",  
14 July 1993 is enclosed.

15 With respect to the Examiner's § 112 rejection of claim 8,  
16 applicants have amended the claim as requested by the Examiner.  
17 No new matter has been added. Applicants wish to thank the  
18 Examiner for bringing this issue to their attention. Applicants  
19 firmly believe that the following comments will convince the  
20 Examiner that his rejections should be reconsidered and  
21 withdrawn.

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1 I. THE INVENTION

2 The present invention relates to liquid artificial nail  
3 composition comprised of an organic solvent and a polymer  
4 compound resulting from the reaction of a di- or tri-functional  
5 amine and a monoethylenically unsaturated vinyl monomer that  
6 contains two or more carbonyl groups (hereinafter referred to as  
7 a "multicarbonyl vinyl containing monomer").

8 The invention also comprises a polymerized artificial nail  
9 structure having a thickness of about 10-60 mils and a modulus of  
10 elasticity of about 550-800 N/m<sup>2</sup>, comprising a polymer resulting  
11 from the reaction of multicarbonyl vinyl containing monomer and a  
12 di- or tri-functional amine.

13 The application discloses a method of reducing, ameliorating  
14 or eliminating delamination of an artificial nail structure from  
15 the natural nail surface, wherein said artificial nail structure  
16 is obtained by polymerizing on the natural nail surface a  
17 polymerizable monomer composition, comprised of at least one  
18 multicarbonyl-vinyl containing monomer.

19 The invention further comprises a method for improving  
20 adhesion of an artificial nail structure to the nail surface,  
21 wherein the artificial nail structure has been applied by  
22 polymerizing on the nail surface a polymerizable monomer  
23 composition, comprising adding to said polymerizable monomer

1 composition an effective amount of at least one  
2 mult carbonyl-vinyl containing monomer.

3 The invention also provides a method for reducing premature  
4 gelation of a liquid monomer composition containing at least one  
5 other ethylenically unsaturated monomer, comprising adding to  
6 said composition an effective amount of at least one  
7 mult carbonyl-vinyl containing monomer. The artificial nail  
8 structure is formed from a two component system. The two  
9 component parts are mixed immediately prior to application in  
10 order to prevent premature polymerization, a problem with prior  
11 art.

12 **II. THE EXAMINER'S REJECTIONS**

13 The Examiner has rejected claims 1,2-23,25 and 31 under 35  
14 U.S.C. 103(a) as being unpatentable over Montgomery in view of  
15 Pagano et al. and Beaver. The Examiner asserts that forming an  
16 artificial nail from a copolymer of monoethylenically unsaturated  
17 vinyl monomer containing two or more carbonyl groups (i.e.,  
18 AAEMA) with a monofunctional ethylenically unsaturated monomer  
19 (i.e., ethyl methacrylate), a hydroxy containing methacrylate  
20 monomer (i.e., hydroxy propyl methacrylate) and a multi  
21 functional methacrylate monomer (i.e., tetraethylene glycol  
22 dimethacrylate) is obvious in view of the combined teachings of  
23 Montgomery and Pagano et al.

1           Applicants respectfully disagree. Montgomery, Beaver and  
2        Pagano et al. all use previously polymerized materials in their  
3        compositions. The applicants' invention is distinguished from  
4        this prior art in that it incorporates monomers which are only  
5        polymerized after application on the nail. This distinction,  
6        which is neither taught nor suggested by the cited references,  
7        yields a number of enhanced properties including improved  
8        adhesion and reduced premature gelation. These properties are  
9        directly related to both in situ polymerization and the novel  
10      structure of the invention's polymer. This polymer structure in  
11      turn is a result of the novel combination of monomers.

12

13      III. THE EXAMINER'S REJECTIONS SHOULD BE RECONSIDERED

14       Applicants respectfully submit that the present claims are  
15      not rendered obvious by the cited references, as suggested by the  
16      Examiner. On further reflection, applicants are confident that  
17      the Examiner will recognize that any rejections based on  
18      Montgomery, Pagano et al. and Beaver could only be the result of  
19      hindsight reconstruction of the applicants' invention. As  
20      discussed above, the present invention is an artificial nail  
21      composition containing monoethylenically unsaturated vinyl  
22      monomer.

1       The Montgomery patent describes an artificial nail  
2       composition that is a polymer of a monofunctional ethylenically  
3       unsaturated monomer (i.e., ethyl methacrylate) crosslinked with a  
4       hydroxy containing methacrylate monomer (i.e., hydroxy propyl  
5       methacrylate) and a multi functional methacrylate monomer (i.e.,  
6       tetraethylene glycol dimethacrylate). This invention does not  
7       incorporate a monoethylenically unsaturated vinyl monomer  
8       containing two or more carbonyl groups (i.e., AAEMA). (Moreover,  
9       the polymerization is performed well in advance of the  
10      application. Only the cross linking is done in situ.

11       Pagano et al. describes a method of forming an artificial  
12      nail from a composition of a copolymer of monoethylenically  
13      unsaturated vinyl monomer containing two or more carbonyl groups  
14      (i.e., AAEMA) with a monofunctional ethylenically unsaturated  
15      monomer (i.e., methyl methacrylate) and an acrylic acid monomer.  
16       The Pagano composition contains neither a hydroxy containing  
17      methacrylate monomer (i.e., hydroxy propyl methacrylate) nor a  
18      multi functional methacrylate monomer (i.e., tetraethylene glycol  
19      dimethacrylate). Furthermore the composition is polymerized well  
20      in advance of the application to the nail rather than utilizing  
21      in situ formation.

22       Beaver teaches the formation of an artificial nail  
23      composition formed from a polymer of a monofunctional

1 ethylenically unsaturated monomer (i.e., methyl methacrylate)  
2 cross linked with monomers of methyl methacrylate and methacrylic  
3 acid. As with Montgomery, the polymer in Beaver's invention is  
4 formed in advance and only cross linked in situ. Thus, the  
5 Examiner's cited references, Montgomery, Beaver or Pagano et al.,  
6 provide no suggestion or incentive that an in situ formation of a  
7 copolymer of monoethylenically unsaturated vinyl monomer  
8 containing two or more carbonyl groups (i.e., AAEMA) with a  
9 monofunctional ethylenically unsaturated monomer (i.e., ethyl  
10 methacrylate), a hydroxy containing methacrylate monomer (i.e.,  
11 hydroxy propyl methacrylate) and a multi functional methacrylate  
12 monomer (i.e., tetraethylene glycol dimethacrylate) will produce  
13 a material with the desired physical properties. Had this been  
14 so, Montgomery could have included the monoethylenically  
15 unsaturated vinyl monomer containing two or more carbonyl groups  
16 in his list of potential copolymer components. Moreover, both  
17 the Pagano and Beaver inventions rely on the use of an acrylic  
18 acid component which has been eliminated in the applicants'  
19 invention. None of the aforementioned prior art describes the  
20 use of in situ polymerization as claimed in the subject  
21 application. Rather all rely on the incorporation of previously  
22 polymerized materials in their compositions.

1       In addition, applicants respectfully point out that,  
2       standing on their own, the references provide no justification  
3       for the combination asserted by the Examiner.

4       Obviousness cannot be established by combining the teachings  
5       of the prior art to produce the claimed invention, absent  
6       some teaching or suggestion supporting the combination.  
7       Under section 103, teachings of references can be combined  
8       only if there is some suggestion or incentive to do so. ACS  
9       Hospital Systems Inc. v. Montefiore Hospital, 732 F.2d 1572,  
10      1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984).

11      (APPLICATION)  
12      Furthermore, Schoon did not have the benefit of Montgomery,

13      Beaver or Pagano et al. as they all issued after March 9, 1998,  
14      the filing date of this application. Therefore, the obviousness  
15      rejection could only be the result of a hindsight view with the  
16      benefit of the applicants' specification. However,

17      "[t]o draw on hindsight knowledge of the patented invention,  
18      when the prior art does not contain or suggest that  
19      knowledge, is to use the invention as a template for its own  
20      reconstruction--an illogical and inappropriate process by  
21      which to determine patentability. The invention must be  
22      viewed not after the blueprint has been drawn by the  
23      inventor, but as it would have been perceived in the state  
24      of the art that existed at the time the invention was made."  
25      (citations omitted) Sesonics v. Aerosonic Corp. 38 USPQ 2d.  
26      1551, 1554 (1996).

27      Under the circumstances, applicants submit that the Examiner

28      has succumbed to the "strong temptation to rely on hindsight."

29      Orthopedic Equipment Co. v. United States, 702 F.2d 1005, 1012,  
30      217 U.S.P.Q. 193, 199 (Fed. Cir. 1983):

31      "It is wrong to use the patent in suit as a guide through  
32      the maze of prior art references, combining the right

1 references in the right way so as to achieve the result of  
2 the claim in suit. Monday morning quarter backing is quite  
3 improper when resolving the question of non-obviousness in a  
4 court of law." Id.  
5

6 Therefore, applicants submit that the only "motivation" for  
7 the Examiner's combination of the cited references to encompass  
8 applicants' invention is provided by the teachings of applicants'  
9 own disclosure. No such motivation is provided by Montgomery,  
10 Beaver and/or Pagano et al., or anywhere else in the known prior  
11 art. Furthermore, there is no suggestion in Montgomery, Beaver or  
12 Pagano et al. that any of their teachings are additive.

13 With respect to the rejection of claims 21 and 22 under §103  
14 obviousness in light of Beaver, the present invention makes no  
15 claim to use phthalic ester plasticisers as stated by the  
16 Examiner. The suggested plasticisers used with the present  
17 invention, namely branched or straight chain alkyl esters, are  
18 described on pages 12-13. None of these plasticisers are  
19 disclosed or claimed by Beaver. Also, as above, it is not  
20 obvious from the teachings of Beaver that the plasticisers chosen  
21 by the applicants would work in the present invention.

22 The Examiner contends that it would be obvious to combine  
23 the teachings of Montgomery, Beaver or Pagano with the teachings  
24 of the present invention to arrive at applicants' invention.  
25 This combination is not legally proper -- on reconsideration the

1 Examiner will undoubtedly recognize that it is actually an  
2 "obvious to try" argument. Of course, "obvious to try" is not  
3 the standard for obviousness under 35 U.S.C. § 103. Hybritech,  
4 Inc. v. Monoclonal Antibodies, Inc., 231 U.S.P.Q. 81, 91  
5 (Fed.Cir. 1986). Therefore the Examiner's contention that it  
6 would be obvious to combine the teachings of Montgomery, Beaver  
7 or Pagano with the teachings of the present invention to arrive  
8 at applicants' invention is improper.

9 Applicants respectfully submit that the Examiner's rejection  
10 under 35 U.S.C. §112 with respect to claim 22 is misapplied as  
11 the questioned solvents are supported in the specification in  
12 detail on page 13, lines 1-6. The Examiner states "In claim 22  
13 "solvent" is vague; solvents for what?" Applicants point out  
14 that this is clearly explained (i.e., both a purpose (as a  
15 plasticizer) and a sample selection of solvents) at page 13,  
16 lines 1-6, which states:

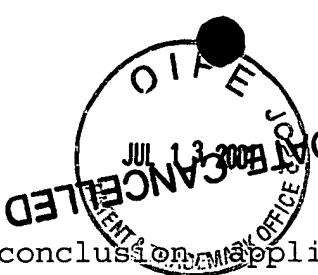
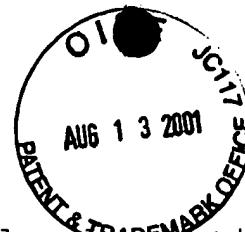
17 " [o]ther suitable plasticizers are low volatility solvents  
18 such a paraffinic hydrocarbons, butyrolactone, xylene,  
19 methyl isobutyl ketone, and the like. Suitable paraffinic  
20 hydrocarbons include isoparaffins having 7-14 carbon atoms.  
21 Examples of other solvents include those set forth on pages  
22 1670 to 1672 of the C.T.F.A. Cosmetic Ingredient Dictionary  
23 and Handbook, Seventh Edition, 1997, which is hereby  
24 incorporated by reference. Particularly preferred is  
25 butyrolactone."

26 Therefore, applicants request that this rejection be  
27 reconsidered and withdrawn.

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CONCLUSION

In conclusion, applicants have disclosed an artificial nail

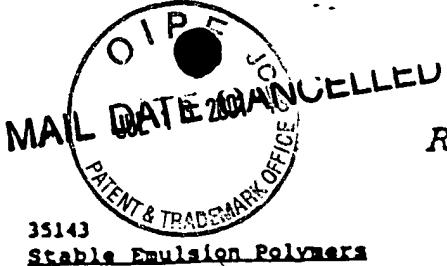
composition containing monoethylenically unsaturated vinyl monomers which are subsequently polymerized on the nail surface. This represents a significant departure from the cited references. The cited references neither teach nor suggest the novel and non-obvious features of this invention.

In view of the foregoing, applicants respectfully submit that the present invention represents a patentable contribution to the art and the application is now in condition for allowance. Early and favorable action is accordingly solicited.

Respectfully submitted,

Date: August 10, 2001

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Research Disclosure - July 1993 / 4



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This disclosure concerns stable emulsion polymers containing an anionic surfactant and acetoacetoxethyl methacrylate (AAEM). The resulting aqueous emulsions are stable and have reduced amounts of coagulum. Many systems that contain the AAEM polymer tend to have coagulum contents higher than 100 ppm. High levels of coagulum can cause processing problems during the emulsion reaction process and result in latexes that are unsuitable for many coating systems. The present emulsion polymer composition generally contains less than 50 ppm coagulum resulting in less processing problems producing latexes that are suitable for more end uses. The disclosed emulsion polymer composition also produces very small particle size emulsions (-100 nanometer diameter) useful in industrial latex system. The disclosed emulsion polymer formulation and procedure are reproducible giving similar particle size and molecular weights. This also results in less processing problems.

The AAEM used in the disclosed emulsion polymer composition is terpolymerized with butyl acrylate and methyl methacrylate monomers. The general preparation of this polymer is disclosed in Tables 1 and 2. The amounts of the monomers in this polymer based on total monomer wt. % generally range from 2 to 30 wt. % AAEM, 15 to 50 wt. % butyl acrylate, and 35 to 70 wt. % methyl methacrylate.

TABLE 1

AAEM Containing Acrylic Emulsion Starting Point Formulation

Composition	Weight (g)
Monomers:	
- AAEM	5.95
- BA (butyl acrylate)	12.86
- MMA (methyl methacrylate)	20.88
Initiator:	
- Ammonium Persulfate $(\text{NH}_4)_2\text{S}_2\text{O}_8$	0.04
Surfactant:	
- Alipal CO-436	0.46
Water	59.81
Total weight of Batch:	100.00

TABLE 2  
AAEM Containing Acrylic Emulsion  
Synthesis Procedure

1. Charge water and surfactant to reactor:
  - Nitrogen sparge
  - Heat to 80°C
2. After reaching 80°C:
  - Add 10t monomer blend
  - Add 10t initiator
3. Once an exotherm (-5°C) is achieved:
  - Begin 3 hour monomer feed
  - Begin 3 hour 20 minute initiator feed
4. Hold for 1 hour at 80°C.
5. Cool to room temperature and filter.

The butyl acrylate can be at least partially substituted with ethyl acrylate, butyl methacrylate, isobutyl acrylate, propyl acrylate, lauryl methacrylate, n-hexyl acrylate and cyclohexyl acrylate. The methyl methacrylate can be at least partially substituted with ethyl methacrylate, propyl methacrylate, isobutyl methacrylate, isopropyl methacrylate, cyclohexyl methacrylate, isobornyl methacrylate, styrene, paramethyl styrene and tertiary butyl methacrylate.

The polymerization initiator for the AAEM terpolymerization is preferably ammonium persulfate,  $(\text{NH}_4)_2\text{S}_2\text{O}_8$  in an amount from about 0.05 to 0.15 % based on total monomer solids (BOMS). Other possible initiators include sodium or potassium persulfates, and other peroxy disulfate types such as peroxodisulfate. Less preferred initiators include azo compounds such as azobis(isobutyronitrile); organic peroxides, including both acyl and alkyl peroxides such as benzoyl peroxide, and hydrogen peroxide; and peresters such as percarbonates and peroxalates, such as sodium formaldehyde sulfoxylate.

The anionic surfactant used in the emulsion polymer composition are those with hydrophilic/lipophilic balance (HLB) values between 20 and 60. Examples of suitable anionic surfactants within this description include alkyaryl sulfonates; sulfonated amines and amides; diphenyl sulfonate derivatives; olefin sulfonates; sulfates and sulfonates of oils and fatty

acids; alcohols; sulfates of ethoxylated alcohols; sulfates of fatty esters; sulfosuccinates; sulfosuccinates; derivatives of tridecyl and dodecyl benzene sulfonic acids; and sulfonates of benzene, toluene, xylene, condensed naphthalenes, dodecyl and tridecylbenzenes, naphthalene, alkyl naphthalene, and petroleum. The more preferred anionic surfactants are sulfates and sulfonates of ethoxylated alkyl phenols with the most preferred being Alipal CO-436 the ammonium salt of sulfated polyethoxynonylphenol.

The amount of anionic surfactant used in the emulsion polymer composition is between about 0.5 to 1.7 BOMS. Amounts much above 1.7 BOMS of surfactant results in smaller particle size and more coagulum during the polymerization. Higher amounts of surfactant also reduce water resistance, adhesion and wetting of the substrate and add to the cost of the formulation. Amounts much below 0.5 BOMS reduces the stability of the system and causes the system to settle out with time.

The amount of water used in the resulting emulsion containing the emulsion polymer composition results in a total solids wt. between 30 and 45%.

Emulsions having a particle size in the range of 95 to 125 nm can be made with Alipal CO-436 in a wt. range of 0.2 to 0.67 wt. %. The resulting emulsions contain less than 50 ppm of coagulum in the system. Coagulum is the result of a glomerated ultra-fine particles. However, the system of the present invention contained resulting small particles i.e., very little grit or glomerated resin with the high molecular weight resins.

Industrial latex systems containing the AAEM are useful in obtaining latexes that cross-link at room temperature through a variety of cross-link mechanisms. The acetoacetyl functionality can cross-link through chelation, enamine formation, Michael reaction and other ambient temperature cure mechanisms. The resulting coating systems have good appearance properties when cast as films and have good water sensitivity.

Related systems are disclosed in EP258988, EP457154, WO9102007 and US 5,055,506.

Disclosed anonymously.

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